MEDICATION PACKING APPARATUS

BACKGROUND OF THE INVENTION

The present invention relates to a medicine packing apparatus, particularly to a medicine packing apparatus that can properly distribute and transfer medicine package belts based on the configuration of the medicine package belt.

Conventionally, there has been produced a medicine packing apparatus that feeds medicines in accordance with prescription data and then separates and packs the medicines by one dose to form a series of medicine package belt. There have been also well known a reel apparatus for reeling the formed medicine package belt and a binding apparatus for binding the reeled medicine package belts.

Anyway, recently, different kinds of medicine package belts according to the use thereof have been required. For example, in the case of dosage for outpatient, it has been desired to provide long medicine package belts in which medicines are packed in series in order of dose. On the other hand, in the case of dosage for inpatient, short medicine package belts cut by one-day dosage (for example, 3 packages of medicine for taking after breakfast, lunch and supper) have been provided.

There are also blank package belts in each of which no medicine is packed. The long and short medicine package belts are bound by separate binding apparatuses respectively, while the blank package belts are discarded.

However, the conventional apparatuses have no construction for distributing the medicine package belts based on the configuration thereof. Therefore, the aforementioned reel apparatus and the binding apparatus have been separately positioned from the medicine packing apparatus so that the long medicine package belts are reeled and bound only when providing them to the outpatients. When providing the medicine package belts to inpatients, the pharmacist or other needs to conduct work for cutting the medicine package belts and binding them by a rubber band or the like. Even when the short medicine package belts cut by one-day dosage are requested by the outpatient, the work for cutting the medicine package belts is necessary. In addition, in the conventional medicine packing apparatus, transfer mechanisms adapted to the configuration of the medicine package belts are necessary, resulting in complexity of construction.

SUMMARY OF THE INVENTION

Therefore, it is an object of the present invention to provide a medicine packing apparatus that can

properly distribute and transfer a different configurations of medicine package belts based on use thereof.

As a first means to solve the problems, the present invention provides a medicine packing apparatus which feeds medicines in accordance with prescription data and then separates and packs the medicines by one dose to form a series of medicine package belts, the apparatus comprising:

a discriminating means for discriminating supply configuration of the medicine package belt to be formed in accordance with prescription data; and

a distributing means for distributing conveying direction of the medicine package belt based on the discriminating result of the discriminating means.

According to this construction, the kind of the medicine package belt can be automatically discriminated to distribute the medicine package belt. Then, a proper process in compliance with the kind of the medicine package belt can be conducted.

In this case, it is preferable that the apparatus further comprises a reel member for reeling the long medicine package belt and a guide member for guiding and collect the short medicine package belts, whereby when a long medicine package belt is discriminated by the discriminating means, the distributing means distribute the

long medicine package belt toward the reel member, while when a short medicine package belt is discriminated by the discriminating means, the distributing means distribute the short medicine package belt toward the guide member.

It is preferable that the guide member can be changed in the guide position thereof in accordance with length of the short medicine package belt to be distributed.

It is preferable that when a blank package belt is discriminated by the discriminating means, the distributing means distribute the blank package belt toward a discharge position. Thus, it is possible to attempt further automatization.

As a second means to solve the problems, the present invention provides a medicine packing apparatus which feeds medicine in accordance with prescription data and then separates and packs the medicine by one dose to form a series of medicine package belt, the apparatus comprising:

a discriminating means for discriminating supply configuration of the medicine package belt to be formed in accordance with prescription data;

a gripping means having a first arm and a second arm, the arms being possible to change an open angle thereof in accordance with the supply configuration discriminated by the discriminating means; and

a moving means for moving the medicine package belt gripped by the gripping means to a binding position.

According to this construction, it is possible to operate the gripping means so as to properly grip the medicine package belt in accordance with the supply configuration.

It is preferable that when a long medicine package belt to be supplied in a reeled condition is discriminated by the discriminating means, the gripping means changes the open angle between the arms to a maximum angle and moves toward the long medicine package belt of reeled condition to grip it, and when a short medicine package belt to be supplied in a collected condition is discriminated by the discriminating means, the gripping means changes the open angle between the arms to a normal angle and waits for the short medicine package belt to be supplied at a supply position, whereby the gripping means opens and closes the arms and collects the short medicine package belts to grip it.

It is also preferable that one of the arms of the gripping means has a press surface and that the moving means turns the gripping means so that the press portion presses the medicine package belt bound in the binding position to discharge it. Thus, the discharge of the bound medicine package belts can be conducted without needing

another additional member.

BRIEF DESCRIPTION OF THE DRAWINGS

Further objects and advantages of the present invention will become clear from the following description taken in conjunction with the preferred embodiments thereof with reference to the accompanying drawings, in which:

Fig. 1 is a schematic front view of a medicine packing apparatus according to the present invention;

Fig. 2 is a sectional view showing a medicine feeder of Fig. 1;

Fig. 3 is an exploded perspective view showing a manual medicine feed section of Fig. 1;

Fig. 4 is a perspective view showing a medicine delivery device of Fig. 1;

Fig. 5 is a perspective view showing a medicine packing section of Fig. 1;

Fig. 6 is a perspective view showing a medicine package belt binding section of Fig. 1;

Fig. 7 is a sectional view showing a binding member of Fig. 1;

Fig. 8a is a front view showing a reel member of Fig. 6, and Fig. 8b a plane view thereof;

Fig. 9a is a front view showing a gripping member of Fig. 6, Fig. 9b a partial front view showing a first

open condition, and Fig. 9c a partial front view showing a second open condition;

Fig. 10 is a plane view of Fig. 9a;

Fig. 11 is a schematic view showing a binding process of long medicine package belt;

Fig. 12 is a schematic view showing a binding process of long medicine package belt; and

Figs. 13a and 13b are schematic views showing a binding process of short medicine package belts, and Fig. 13c a schematic views showing a discharging condition of blank package belts.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Hereinafter, an embodiment according to the present invention will be explained in accordance with the accompanying drawings.

Fig. 1 shows a medicine packing apparatus according to the present embodiment. The medicine packing apparatus comprises a medicine feed section 1, a medicine packing section 2, a medicine package belt binding section 3 and a control section 4 for driving and controlling these sections. In this embodiment, the control section 4 plays a part as discriminating means of the present invention.

The medicine feed section 1 includes a medicine automatic feed portion 5 and a medicine manual feed portion

6.

The medicine automatic feed portion 5 is provided with total 15 medicine feeders 8 of vertically arranged 3 stages by horizontally arranged 5 columns in an upper panel 7. For each column of the medicine feeders 8, medicine passages 16 are formed. The medicine feeders 8 situated at the uppermost position are set at the necessary height for an operator to access them without using a stool.

Each medicine feeder 8, as shown in Fig. 2, comprises a motor base 9 and a feeder vessel 10 detachably mounted on the motor base 8. The feeder vessel 10 has a substantially rectangular shape with an upper opening closed by a cover 11. Each feeder vessel 10 contains a different kind of medicines respectively. In the present embodiment, the feeder vessels 10 in 2 columns on the right side contain pyrazolone medicines, while the feeder vessels 10 in 3 columns on the left side contain nonpyrazolone medicines. On the bottom of the feeder vessel 10 are rotatably provided a rotor 12. The rotor 12 is rotated through a gear 13 by a motor 14 in the motor base 9. Then the rotor 12 discharges the medicines contained in the feeder vessel 10 one by one through a drop guide passage 15 to a medicine passage 16.

The medicine manual feed portion 6 is arranged to feed medicines (medicines having little chance of being

dispensed or medicines having a broken quantity such as half-tablets or so) that are not contained in the medicine feeders 8 of the medicine automatic feed portion 5 (in detail, refer to Japanese Patent publication 6-37202). As shown in Fig. 3, the medicine manual feed portion 6 is provided with a tablet bucket 22 on a support frame 21. The tablet bucket 22 is formed with a plurality of distributor boxes 23 by partitioning the tablet bucket 22 like a grating. The medicine manual feed portion 6 is provided with a tablet tray 24 having a plurality of distributor boxes 24a with same construction as the tablet bucket 22. The medicines contained in the tablet tray 24 in advance are simultaneously supplied to each distributor box 23. The different kinds of medicines are supplied to the distributor boxes 23 in an area A and an area B of the tablet bucket 22. In the present embodiment, the distributor boxes 23 in the area A is supplied with pyrazolone medicines, while the distributor boxes 23 in the area B is supplied with nonpyrazolone medicines. The bottom of each distributor box 23 is opened in order of position from the distributor box 23 positioned at one end. The operator has to distribute a necessary number of required tablets by handwork (manual distribution) in consideration of the order of opening the distributor box 23. The position of the medicine manual feed portion 6 is

set at such a height that the operator can easily make a work for the manual distribution of the medicines in each distributor box 23.

Beneath the medicine feed section 2, as shown in Fig. 1, a first hopper 25 and a second hopper 26 are disposed. Each hopper 25, 26 has a shape of substantially truncated pyramid and is made of transparent synthetic resin. Thus, the medicines passing through each hopper 25, 26 can smoothly drop downward even in a narrow space limited in a vertical direction. From the view point of workability, the medicine automatic feed portion 5 and the medicine manual feed portion 6 are restricted in their position. Therefore, if a single hopper is disposed in the narrow space limited in a vertical direction, it is not possible to make the angle of the inner surface of the hopper large, resulting in difficulty of smoothly dropping the medicines. According to the hoppers 25, 26 of the present embodiment, each hopper receives the dropping medicines within the extent of each limited area, enabling to make the angle of the inner surface of each hopper large enough.

The first hopper 25 is provided so as to correspond to both the feeder vessels 10 of the medicine automatic feed portion 5 in 2 columns on the right side and distributor boxes 24a of the medicine manual feed portion 6

on the right side. On the other hand, the second hopper 26 is provided so as to correspond to both the feeder vessels 10 of the medicine automatic feed portion 5 in 3 columns on the left side and distributor boxes 24a of the medicine manual feed portion 6 on the left side. Thus, even if the pyrazolone medicines remain in the inside of the first hopper 25 or so, the nonpyrazolone medicines pass through the second hopper 26, preventing the pyrazolone medicines from adhering to the surface of the nonpyrazolone medicines. Therefore, it is possible to securely deliver the medicine to the patient who is allergic to the pyrazolone medicines.

Beneath the second hopper 26, as shown in Fig. 4, there is disposed a shutter 28 which is slidably guided by a shutter guide 27. The shutter guide 27 has a plate-like shape. On the center of the lower surface of the shutter guide, a groove portion 27a for guiding the both side portions of the shutter 28 is formed. On one end of the shutter guide 27 is formed a through hole 27b which is positioned beneath the lower opening of the second hopper 26. The shutter 28 has a plate-like shape with a thickness substantially same as the depth of the groove portion 27a. The shutter 28 is formed with a rectangular aperture 28a. On an inner edge of the rectangular aperture 28a is formed a rack 28b which engages with a shutter gear 29a. Driving a shutter motor 29 to rotate the shutter gear 29a allows

the shutter 28 to move in the direction of X, X' as shown in Fig. 4.

Under the shutter 28, there is disposed a medicine delivery device 30 comprising a delivery guide portion 31 and a delivery vessel 32 slidably guided by the delivery guide portion 31.

The delivery guide portion 31 has a substantially U-shape in its section and is formed with a long aperture 33 in one of the side walls thereof. On one end of the delivery vessel 32, there is formed a rectangular through hole 34 which opens in both upper and lower directions. The through hole 34 and the bottom of the delivery guide portion 31 define a delivery recess portion 35. On the side surface of the delivery vessel 32, there is formed a rack portion 36 laterally protruding through the long aperture 33 of the delivery guide portion 31. The rack portion 36 engages with a delivery gear 37a provided on a base. Driving a delivery motor 37 to rotate the delivery gear 37a allows the delivery vessel 32 to move in the direction of Y, Y' as shown in Fig. 4.

On the other hand, beneath the first hopper 25 there is removably disposed a common hopper 38. The inside of the common hopper 38 is partitioned to form both a passage for the pyrazolone medicines and a passage for the nonpyrazolone medicines independently from each other.

Alternatively, two hoppers of same shape with no partition formed may be prepared as the common hopper 38 so that the hoppers can be replaced with each other in both the case of supplying the nonpyrazolone medicines through the medicine delivery device 30 and the case of supplying the pyrazolone medicines through the first hopper 25. The lower opening of the common hopper 38 is positioned on an opening of a medicine package produced by the medicine packing section 2.

The medicine packing section 2, as shown in Fig. 5, comprises a pair of cross heating heat rollers 100 and a pair of longitudinal heating heat rollers 101, which are disposed in a conveyance passage of a packing sheet 39. The former is one for heating the sheet in a sheet width direction, while the latter is one for heating the side edge of the sheet. The cross heating heat rollers 100 have a cross heating surface 102 of segment shape and a feed surface 103 of straight shape. Each pair of rollers 100 and 101 is connected to a drive motor 104 via a transmission mechanism comprising gears. In the medicine packing section 2, the feed surfaces 103 of the cross heating heat rollers 100 are opposed to each other and the longitudinal heating heat rollers 101 are rotated. Then, the cross heating surfaces 102 of the cross heating heat rollers 100 are opposed to each other to seal the packing sheet 39. Thus, the size of the medicine package can be

changed by properly adjusting the quantity of movement of the packing sheet 39 until it is sealed. At this time, roulette can be formed on the sealed medicine package by means of roulette blade 105 provided on the cross heating surface 102 of the cross heating heat roller 100 (if necessary, refer to Japanese Laid-open patent publication 8-230832 and Japanese Laid-open patent publication 9-202301).

In the medicine package belt binding section 3, as shown in Fig. 6, a distributing member 42, a reel member 43, a gripping member 44 and a binding member 45 are provided on an inclined plate 41.

The inclined plate 41 is inclined obliquely downward along a moving direction of the formed medicine package belts. On the side edge of the inclined plate 41 are formed a guide wall 46 in a right-angled direction to the surface of the inclined plate 41. On the guide wall 46, there is provided a guide piece 47 which is movable back and forth along the inclined direction of the inclined plate 41. The guide piece 47 has a substantially L-shape and protrudes from the guide wall 46 so that the short medicine package belt cut every predetermined number of packages is guided between the guide wall 46 and the guide piece 47. The guide piece 47 and the guide wall 46 have such a height that the medicine package belt protrudes from

the upper edges thereof so as to be gripped by the gripping member 44.

The distributing member 42 is fabricated by bending a plate to substantially U-shape in section. The distributing member 42 is mounted on the upper edge side of the inclined plate 41. The distributing member 42 is pivotable around a support shaft 42a by the rotation of a motor unshown so that the medicine package belt can be distributed in three directions in accordance with the packing configuration thereof in the medicine packing section 2. In the present embodiment, for example, the short medicine package belts cut every three packages, the long medicine package belts and the blank package belts can be distributed in three different directions respectively. Namely, the short medicine package belts are distributed to the guide wall 46 and the guide piece 47, the long medicine package belts are distributed to the reel member 43 and the blank package belts are distributed to the binding member 45.

The reel member 43, as shown in Fig. 8, comprises a support portion 50 having guide shafts 49 in both end portions thereof. The support portion 50 is possible to descend and ascend by means of a motor 50a and also rotate by means of an unshown motor. A circular plate 51 having apertures 51a is rested on the support portion 50 so that

the guide shafts 49 can slidably penetrate into the apertures 51a. The inclined plate 41 is formed with a opening portion 52 through which the support portion 50 descends and ascends. A stopper plate 53 is fixed on the lower inner periphery of the opening portion 52, which allows the support portion 50 to move downward and prevents the circular plate 51 from moving downward. In the reel member 43, the support portion 50 is rotated at the upper position to reel the medicine package belt around the guide shafts 49. Then, the support portion 50 is driven to descend so that the guide shafts 49 are released from the medicine package belt and the medicine package belt is supported on the circular plate 51. Thus, the medicine package belt reeled by the reel member 43 can be smoothly conveyed only by gripping and turning the medicine package belt with the gripping member 44.

The gripping member 44, as shown in Fig. 9, is provided with a moving block 110, a first arm 111 and a second arm 112.

The moving block 110 comprises a first moving block 113 fabricated by bending a flat plate and a second moving block 114. The first moving block 113 is supported on a guide shaft 115 and a screw shaft 116 that are juxtaposed. When a motor 117 is driven to rotate the screw shaft 116, the first moving block 113 moves back and forth

parallel to the inclined plate 41. In the same manner, the second moving block 114 is supported on a guide shaft 118 and a screw shaft 119 that are juxtaposed on the first moving block 113. When a motor 120 is driven to rotate the screw shaft 119, the second moving block 114 moves back and forth parallel to the inclined plate 41 in a direction perpendicular to the moving direction of the first moving block 113. Thus, the both arms 111, 112 are movable to a guide position by the guide piece 47, a reel position by the reel member 43 and a binding position by the binding member 45.

The both arms 111, 112 are pivotably mounted on one end of a rotation shaft 121, which is provided on the second moving block 114, around support shafts 111a, 112a respectively. Driving a motor 122 causes the arms 111, 112 to turn via gears 123a, 123b. The first arm 111 has a plate like shape and has a press receiving portion 124 adjacent to the support shaft 111a. The second arm 112 has a resilient projection 125 on a distal end thereof and a press portion 126 on a proximal end thereof. When a motor 127 is driven to extend a rod 128, the end of the rod 128 presses the side edge of the press portion 126 to pivot the second arm 112.

The arms 111, 112 are urged by an unshown spring so that the ends thereof move toward each other to grip the

medicine package belt between the resilient projection 125 and the first arm 11. When the motor 127 is driven to cause the rod 128 to extend and then press the press portion 126 of the second arm 112, the arms 111, 112 pivot to a first open condition (refer to Fig. 9(b)) and a second open condition (refer to Fig. 9(c)). In the first open condition, only the second arm 112 pivots to separate from the first arm 111. In the second open condition, the second arm 112 further pivots to cause the first arm 111 to pivot and make the open angle large.

The binding member 45, as shown in Figs. 1 and 7, is provided with a tape feed portion 64 for feeding a binding tape 63 and a guide member 65 for guiding the binding tape 63 fed from the tape feed portion 64 to make it circle. The guide member 65 comprises a first guide member 66 and a second guide member 67 which are possible to approach to and separate from each other in a direction of thickness. In the centers of the guide members 66, 67 are formed rectangular apertures 66a, 67a into which the medicine package belt gripped by the gripping member 44 is inserted. On the periphery of the rectangular aperture 66a of the first guide member 66 are formed an annular projection 66b toward the second guide member 67, while around the rectangular aperture 67a of the second guide member 67 are formed an annular projection 67b toward the

first guide member 66. The annular projection 66b of the first guide member 66 is positioned inside the annular projection 67b of the second guide member 67. The projection dimension of the annular projection 66b of the first guide member 66 is half of that of the annular projection 67b of the second guide member 67. The space between the annular projection 66b and the annular projection 67b defines a guide passage for guiding the biding tape 63. The guide member 65 is provided with a heat-seal portion 68 for heat-sealing the binding tape 63 fed from the tape feed portion 64.

Next, operation of the aforementioned medicine packing apparatus will be explained.

In accordance with the prescription data from the host computer unshown, the medicine feed section 1 feeds the corresponding medicines. If the medicines can be automatically fed, such medicines are discharged from the tablet feeder 8 of the medicine automatic feed portion 5, while if the medicines should be manually fed, such medicines are discharged from the medicine manual feed portion 6. The pyrazolone medicines are directly fed to the medicine packing section through the one passage of the common hopper 38 from the first hopper 25. The nonpyrazolone medicines are once fed to the medicine delivery device 30 through the second hopper 26. In the

medicine delivery device 30, the delivery motor 37 is driven to move the delivery vessel 32 in the direction of arrow Y', whereby the medicines contained in the delivery vessel 35 are fed to the medicine packing section through the other passage of the common hopper 38. Thus, the passages are completely separated, eliminating the remaining powder or so of the pyrazolone medicines from adhering to the nonpyrazolone medicines. In the case of using the hoppers without partition as the hopper 38, the hoppers are replaced with each other in both the case of supplying the nonpyrazolone medicines and the case of supplying the pyrazolone medicines.

The medicine packing section 2 packs the medicines fed from the medicine feed section 1 by one dose. Namely, as the elongated packing sheet 39 is unwound and folded into two, the packing sheet 39 is sealed by the cross heating heat roller 100 at positions spaced in the longitudinal direction. When the medicines are received in the opening of the packing sheet 39 through the common hopper 38, the opening is sealed with the longitudinal heating heat roller 101. The medicine package belt with the medicines contained is cut with a cutter unshown. In the case of outpatient, the medicine package belt is cut by an unit of one-week dosages (21 packages) to obtain long medicine package belts. In the case of inpatient, the

medicine package belt is cut by an unit of one-day dosages (3 or 4 packages) to obtain short medicine package belts.

In the medicine package binding section 3, the medicine package belts are distributed by the distributing member 42 in accordance with the configurations thereof. The configuration of the medicine package belt is automatically decided by the control section 4 based on the prescription data. For example, since the long medicine package belts are produced in the case of outpatient and short medicine package belts are produced in the case of inpatient, the distribution direction of the distributing member 42 may be decided based on outpatient or inpatient.

In the case of the long medicine package belts, as shown in Fig. 11(a), the distributing member 42 is positioned in a middle position so that the medicine package belt is straightly moved along an inclination direction of the inclined plate 41. Then, as shown in Fig. 11(b), the reel member 43 is driven to reel the medicine package belt on the both guide shafts 49. The reel member 43 is stopped when the guide shafts 49 are directed to the inclination direction of the inclined plate 41 and the terminal end of the medicine package belt is positioned at the downstream side of the reel direction with respect to the lower side guide shaft 49 as shown in Fi. 11(c). Thus, the terminal end of the medicine package belt rewound on

the reel member 43 is directed obliquely downwardly, making the medicine package belt difficult to be unwound.

The gripping member 44 is positioned at an obliquely downward position with respect to the distributing member 42 and opened in the second open condition in advance. When finishing the reel of the medicine package belt, the gripping member 44 is moved upwardly along the inclined plate 41 as shown in Fig. 12(a). At the time when the arms 11, 112 pass through the lower-side guide shaft 49 and positioned both sides of the reeled medicine package belt, the arms 11, 112 are operated to grip the medicine package belt. Then, as shown in Fig. 12(b), the reel member 43 is descended and then the gripping member 44 is pivoted and moved toward the binding member 45.

Consequently, as shown in Fig. 12(c), the center portion of the medicine package belt gripped by the gripping member 44 is positioned in the rectangular apertures 66a, 67a of the guide member 65 of the binding member 45. In detail, the medicine package belt is positioned so as to come into contact with the obliquely downwardly situated side edges of the rectangular apertures 66a, 67a. Then, the binding tape 63 is fed to the guide member 65 from the tape feed portion 64. The binding tape 63 goes around the guide passage of the guide member 65.

At this time, the first guide member 66 is disengaged from the second guide member 67 and then the biding tape 63 is rewound to bind the medicine package belt. Then, the overlapped portion of the binding tape 63 is heat-sealed by the heat-seal portion 68.

After that, the second arm 112 of the gripping member 44 is pivoted to the first open condition and the gripping member 44 is moved in the direction apart from the binding member 45. Then, as shown two-dots chain line in Fig. 12(c), the gripping member 44 is pivoted and moved so that the flat portion of the first arm 111 pushes the medicine package belt to discharge it through an unshown takeout port.

In the case of the short medicine package belts, as shown in Fig. 13(a), the distributing member 42 is pivoted to the guide wall 45 side. The guide piece 47 is moved in accordance with a cut length of the short medicine package belt. The gripping member 44 with the arms 11, 112 opened in the first open condition is moved in the vicinity of the guide piece 47. Every time when the short medicine package belts are fed, the second arm 112 is pivoted to assemble the short medicine package belts along the guide wall 46. Thus, the short medicine package belts can be smoothly supplied. When the supply of the short medicine package belts is completed, as shown in Fig. 13(b), the

short medicine package belts are gripped by the gripping member 44 and conveyed to the binding member 45 to bind the center portion of the short medicine package belts in the same manner as above described. After that, the bound short medicine package belts are discharged.

In the case of the blank package belts, as shown in Fig. 13(c), the distributing member 42 is pivoted to the binding member 45 side. The blank package belts are formed in the case that continuous packaging is not preferred, such as the case of different patients and so on. For example, if the prescription data is different, it is decided that the blank package belts are to be formed, whereby the distributing member 42 is pivoted to the binding member 45 side. In the passage to the rectangular aperture 66a, 67a of the binding member 45 from the distribution member 42, a guide passage may be preferably formed.

In the aforementioned embodiment, although two medicine feed passages are formed by the hoppers 25, 26, if three of more passages are necessary, hoppers with the number corresponding to that of the passages may be provided. In this case, as the medicine delivery device 30, for example, a belt conveyer or so is preferably used.

As clear from the aforementioned explanation, according to the medicine packing apparatus of the present

invention as a first means, because the kind of the medicine package belt can be automatically discriminated to distribute the medicine package belt, it is possible to easily supply a proper kind of medicine package belt in accordance with use thereof.

The length of the medicine package belt is discriminated, whereby the long medicine package belt is distributed toward the reel member and reeled, while the short medicine package belt is collected in the guide member. It is possible to properly recover the medicine package belts based on the length of the medicine package belts.

Particularly, the guide member can be changed in the guide position thereof in accordance with length of the short medicine package belt to be distributed, whereby more proper recovery of the medicine package belt is possible.

In addition, the blank package belt can be discriminated to discharge it, whereby it is possible to further automatize the supply of the medicine package belts.

According to the medicine packing apparatus of the present invention as a second means, because the open angle of the arms constituting the gripping means can be changed in accordance with the supply configuration discriminated by the discriminating means, various configurations of the medicine package belts can be

properly gripped. Operation of the moving means causes the medicine package belts to be easily conveyed to a desired position. Therefore, conveyance mechanism of the medicine package belts can be simplified.

particularly, in the case that the a plurality of the short medicine package belts are supplied one after another, opening and closing the arms causes the short medicine package belts to be collected, whereby the medicine package belts which is intermittently supplied can be surely gripped at a predetermined position.

In addition, one of the arms of the gripping means is formed with the press surface and the gripping means can be turned by the moving means, whereby the bound medicine package belts can be properly discharged by the press portion without needing new mechanism.

Although the present invention has been fully described by way of the examples with reference to the accompanying drawings, it is to be noted here that various changes and modifications will be apparent to those skilled in the art. Therefore, unless such changes and modifications otherwise depart from the spirit and scope of the present invention, they should be construed as being included therein.